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<110>   Schutte, Brian C.
         Murray, Jeffrey C.
         Kondo, Shinji
         Dixon, Michael J.

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<140>   US
<141>   2004-05-06

<150>   US 60/468,191
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gacgggtgat cttcgctgcg gacttggttc ggagggacgt ccgcttctgg tggacagatt     180

gagcaaagaa tctttgagcg gtcaagggaa agacaagccg actcttcaga tccctgtgga     240

cacactgcct gctcttccat atc atg gcc ctc cac ccc cgc aga gtc cgg cta     293
                          Met Ala Leu His Pro Arg Arg Val Arg Leu
                           1               5                   10
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Lys Pro Trp Leu Val Ala Gln Val Asp Ser Gly Leu Tyr Pro Gly Leu
               15                  20                  25
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atc tgg cta cac agg gac tct aaa cgc ttc cag att ccc tgg aaa cat      389
Ile Trp Leu His Arg Asp Ser Lys Arg Phe Gln Ile Pro Trp Lys His
               30                  35                  40
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gcc acc cgg cat agc cct caa caa gaa gag gaa aat acc att ttt aag      437
Ala Thr Arg His Ser Pro Gln Gln Glu Glu Glu Asn Thr Ile Phe Lys
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gcc tgg gct gta gag aca ggg aag tac cag gaa ggg gtg gat gac cct      485
Ala Trp Ala Val Glu Thr Gly Lys Tyr Gln Glu Gly Val Asp Asp Pro
    60                  65                  70
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Asp Pro Ala Lys Trp Lys Ala Gln Leu Arg Cys Ala Leu Asn Lys Ser
75                  80                  85                  90
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aga gaa ttc aac ctg atg tat gat ggc acc aag gag gtg ccc atg aac      581
Arg Glu Phe Asn Leu Met Tyr Asp Gly Thr Lys Glu Val Pro Met Asn
               95                  100                 105
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cca gtg aag ata tat caa gtg tgt gac atc cct cag ccc cag ggc tcg      629
Pro Val Lys Ile Tyr Gln Val Cys Asp Ile Pro Gln Pro Gln Gly Ser
               110                 115                 120
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atc att aac cca gga tcc aca ggg tct gct ccc tgg gat gag aag gat      677
Ile Ile Asn Pro Gly Ser Thr Gly Ser Ala Pro Trp Asp Glu Lys Asp
               125                 130                 135
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Asn Asp Val Asp Glu Glu Asp Glu Glu Asp Glu Leu Asp Gln Ser Gln
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cac cat gtt ccc atc cag gac acc ttc ccc ttc ctg aac atc aat ggt      773
His His Val Pro Ile Gln Asp Thr Phe Pro Phe Leu Asn Ile Asn Gly
155                 160                 165                 170
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tct ccc atg gcg cca gcc agt gtg ggc aat tgc agt gtg ggc aac tgc      821
Ser Pro Met Ala Pro Ala Ser Val Gly Asn Cys Ser Val Gly Asn Cys
               175                 180                 185
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6

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agc ccg gag gca gtg tgg ccc aaa act gaa ccc ctg gag atg gaa gta          869
Ser Pro Glu Ala Val Trp Pro Lys Thr Glu Pro Leu Glu Met Glu Val
            190             195             200

ccc cag gca cct ata cag ccc ttc tat agc tct cca gaa ctg tgg atc          917
Pro Gln Ala Pro Ile Gln Pro Phe Tyr Ser Ser Pro Glu Leu Trp Ile
            205             210             215

agc tct ctc cca atg act gac ctg gac atc aag ttt cag tac cgt ggg          965
Ser Ser Leu Pro Met Thr Asp Leu Asp Ile Lys Phe Gln Tyr Arg Gly
            220             225             230

aag gag tac ggg cag acc atg acc gtg agc aac cct cag ggc tgc cga        1013
Lys Glu Tyr Gly Gln Thr Met Thr Val Ser Asn Pro Gln Gly Cys Arg
235             240             245             250

ctc ttc tat ggg gac ctg ggt ccc atg cct gac cag gag gag ctc ttt        1061
Leu Phe Tyr Gly Asp Leu Gly Pro Met Pro Asp Gln Glu Glu Leu Phe
                255             260             265

ggt ccc gtc agc ctg gag cag gtc aaa ttc cca ggt cct gag cat att        1109
Gly Pro Val Ser Leu Glu Gln Val Lys Phe Pro Gly Pro Glu His Ile
                270             275             280

acc aat gag aag cag aag ctg ttc act agc aag ctg ctg gac gtc atg        1157
Thr Asn Glu Lys Gln Lys Leu Phe Thr Ser Lys Leu Leu Asp Val Met
            285             290             295

gac aga gga ctg atc ctg gag gtc agc ggt cat gcc att tat gcc atc        1205
Asp Arg Gly Leu Ile Leu Glu Val Ser Gly His Ala Ile Tyr Ala Ile
        300             305             310

agg ctg tgc cag tgc aag gtg tac tgg tct ggg cca tgt gcc cca tca        1253
Arg Leu Cys Gln Cys Lys Val Tyr Trp Ser Gly Pro Cys Ala Pro Ser
315             320             325             330

ctt gtt gct ccc aac ctg att gag aga caa aag aag gtc aag cta ttt        1301
Leu Val Ala Pro Asn Leu Ile Glu Arg Gln Lys Lys Val Lys Leu Phe
            335             340             345

tgt ctg gaa aca ttc ctt agc gat ctc att gcc cac cag aaa gga cag        1349
Cys Leu Glu Thr Phe Leu Ser Asp Leu Ile Ala His Gln Lys Gly Gln
            350             355             360

ata gag aag cag cca ccg ttt gag atc tac tta tgc ttt ggg gaa gaa        1397
Ile Glu Lys Gln Pro Pro Phe Glu Ile Tyr Leu Cys Phe Gly Glu Glu
            365             370             375

tgg cca gat ggg aaa cca ttg gaa agg aaa ctc atc ttg gtt cag gtc        1445
Trp Pro Asp Gly Lys Pro Leu Glu Arg Lys Leu Ile Leu Val Gln Val
            380             385             390

att cca gta gtg gct cgg atg atc tac gag atg ttt tct ggt gat ttc        1493
Ile Pro Val Val Ala Arg Met Ile Tyr Glu Met Phe Ser Gly Asp Phe
395             400             405             410

aca cga tcc ttt gat agt ggc agt gtc cgc ctg cag atc tca acc cca        1541
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7

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Thr Arg Ser Phe Asp Ser Gly Ser Val Arg Leu Gln Ile Ser Thr Pro
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gac atc aag gat aac atc gtt gct cag ctg aag cag ctg tac cgc atc      1589
Asp Ile Lys Asp Asn Ile Val Ala Gln Leu Lys Gln Leu Tyr Arg Ile
            430                 435        .        440

ctt caa acc cag gag agc tgg cag ccc atg cag ccc acc ccc agc atg      1637
Leu Gln Thr Gln Glu Ser Trp Gln Pro Met Gln Pro Thr Pro Ser Met
            445                 450                 455

caa ctg ccc cct gcc ctg cct ccc cag taa ttgtgaatgc catcttcttc       1687
Gln Leu Pro Pro Ala Leu Pro Pro Gln
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caaagttcta gctgcagctt tgcttccaat gtgaccttga acaagtcctt taacctctgg    1987

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Ser Lys Arg Phe Gln Ile Pro Trp Lys His Ala Thr Arg His Ser Pro
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Gln Gln Glu Glu Glu Asn Thr Ile Phe Lys Ala Trp Ala Val Glu Thr
        50                  55                  60
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Gly Lys Tyr Gln Glu Gly Val Asp Asp Pro Asp Pro Ala Lys Trp Lys
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Ala Gln Leu Arg Cys Ala Leu Asn Lys Ser Arg Glu Phe Asn Leu Met
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Tyr Asp Gly Thr Lys Glu Val Pro Met Asn Pro Val Lys Ile Tyr Gln
            100   105   110

Val Cys Asp Ile Pro Gln Pro Gln Gly Ser Ile Ile Asn Pro Gly Ser
        115   120   125

Thr Gly Ser Ala Pro Trp Asp Glu Lys Asp Asn Asp Val Asp Glu Glu
    130   135   140

Asp Glu Glu Asp Glu Leu Asp Gln Ser Gln His His Val Pro Ile Gln
145   150   155   160

Asp Thr Phe Pro Phe Leu Asn Ile Asn Gly Ser Pro Met Ala Pro Ala
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Ser Val Gly Asn Cys Ser Val Gly Asn Cys Ser Pro Glu Ala Val Trp
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Pro Lys Thr Glu Pro Leu Glu Met Glu Val Pro Gln Ala Pro Ile Gln
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Pro Phe Tyr Ser Ser Pro Glu Leu Trp Ile Ser Ser Leu Pro Met Thr
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Asp Leu Asp Ile Lys Phe Gln Tyr Arg Gly Lys Glu Tyr Gly Gln Thr
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Met Thr Val Ser Asn Pro Gln Gly Cys Arg Leu Phe Tyr Gly Asp Leu
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Gly Pro Met Pro Asp Gln Glu Glu Leu Phe Gly Pro Val Ser Leu Glu
            260   265   270

Gln Val Lys Phe Pro Gly Pro Glu His Ile Thr Asn Glu Lys Gln Lys
        275   280   285

Leu Phe Thr Ser Lys Leu Leu Asp Val Met Asp Arg Gly Leu Ile Leu

9

Glu Val Ser Gly His Ala Ile Tyr Ala Ile Arg Leu Cys Gln Cys Lys
305   310   315   320

Val Tyr Trp Ser Gly Pro Cys Ala Pro Ser Leu Val Ala Pro Asn Leu
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Ile Glu Arg Gln Lys Lys Val Lys Leu Phe Cys Leu Glu Thr Phe Leu
                340   345   350

Ser Asp Leu Ile Ala His Gln Lys Gly Gln Ile Glu Lys Gln Pro Pro
        355   360   365

Phe Glu Ile Tyr Leu Cys Phe Gly Glu Glu Trp Pro Asp Gly Lys Pro
    370   375   380

Leu Glu Arg Lys Leu Ile Leu Val Gln Val Ile Pro Val Val Ala Arg
385   390   395   400

Met Ile Tyr Glu Met Phe Ser Gly Asp Phe Thr Arg Ser Phe Asp Ser
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Gly Ser Val Arg Leu Gln Ile Ser Thr Pro Asp Ile Lys Asp Asn Ile
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Val Ala Gln Leu Lys Gln Leu Tyr Arg Ile Leu Gln Thr Gln Glu Ser
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Trp Gln Pro Met Gln Pro Thr Pro Ser Met Gln Leu Pro Pro Ala Leu
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Pro Pro Gln
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Ser Lys Arg Phe Gln Ile Pro Trp Lys His Ala Thr Arg His Ser Pro
            35   40   45

Gln Gln Glu Glu Glu Asn Thr Ile Phe Lys Ala Trp Ala Val Glu Thr
        50   55   60

Gly Lys Tyr Gln Glu Gly Val Asp Asp Pro Asp Pro Ala Lys Trp Lys
65   70   75   80

Ala Gln Leu Arg Cys Ala Leu Asn Lys Ser Arg Glu Phe Asn Leu Met
                85   90   95

Tyr Asp Gly Thr Lys Glu Val Pro Met Asn Pro Val Lys Ile Tyr Gln
            100   105   110

Val Cys Asp Ile Pro Gln Pro Gln Gly Ser Ile Ile Asn Pro Gly Ser
            115   120   125

Thr Gly Ser Ala Pro Trp Asp Glu Lys Asp Asn Asp Val Asp Glu Glu
        130   135   140

Asp Glu Glu Asp Glu Leu Asp Gln Ser Gln His His Val Pro Ile Gln
145   150   155   160

Asp Thr Phe Pro Phe Leu Asn Ile Asn Gly Ser Pro Met Ala Pro Ala
                165   170   175

Ser Val Gly Asn Cys Ser Val Gly Asn Cys Ser Pro Glu Ala Val Trp
            180   185   190

Pro Lys Thr Glu Pro Leu Glu Met Glu Val Pro Gln Ala Pro Ile Gln
        195   200   205

Pro Phe Tyr Ser Ser Pro Glu Leu Trp Ile Ser Ser Leu Pro Met Thr

Asp Leu Asp Ile Lys Phe Gln Tyr Arg Gly Lys Glu Tyr Gly Gln Thr
225   230   235   240

Met Thr Val Ser Asn Pro Gln Gly Cys Arg Leu Phe Tyr Gly Asp Leu
                    245   250   255

Gly Pro Met Pro Asp Gln Glu Glu Leu Phe Gly Pro Val Ser Leu Glu
                260   265   270

Gln Val Lys Phe Pro Gly Pro Glu His Ile Thr Asn Glu Lys Gln Lys
            275   280   285

Leu Phe Thr Ser Lys Leu Leu Asp Val Met Asp Arg Gly Leu Ile Leu
    290   295   300

Glu Val Ser Gly His Ala Ile Tyr Ala Ile Arg Leu Cys Gln Cys Lys
305   310   315   320

Val Tyr Trp Ser Gly Pro Cys Ala Pro Ser Leu Val Ala Pro Asn Leu
                325   330   335

Ile Glu Arg Gln Lys Lys Val Lys Leu Phe Cys Leu Glu Thr Phe Leu
                340   345   350

Ser Asp Leu Ile Ala His Gln Lys Gly Gln Ile Glu Lys Gln Pro Pro
            355   360   365

Phe Glu Ile Tyr Leu Cys Phe Gly Glu Glu Trp Pro Asp Gly Lys Pro
    370   375   380

Leu Glu Arg Lys Leu Ile Leu Val Gln Val Ile Pro Val Val Ala Arg
385   390   395   400

Met Ile Tyr Glu Met Phe Ser Gly Asp Phe Thr Arg Ser Phe Asp Ser
                405   410   415

Gly Ser Val Arg Leu Gln Ile Ser Thr Pro Asp Ile Lys Asp Asn Ile
                420   425   430

Val Ala Gln Leu Lys Gln Leu Tyr Arg Ile Leu Gln Thr Gln Glu Ser
            435   440   445

16

Trp Gln Pro Met Gln Pro Thr Pro Ser Met Gln Leu Pro Pro Ala Leu
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Pro Pro Gln
465

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